

# MATHEMATICS AND STATISTICS



# NEWSLETTER



November - December 2004

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## CONGRATULATIONS

- To Louise Burt. She is the 2004 over 40 Scottish Hill Running champion. Competitors have to run in a series of hill races throughout the year - the title wasn't decided until the final race, so it was very exciting!
- To Kenneth Falconer who has been re-elected to the Council of the London Mathematical Society for a further two years.
- Congratulations to Paul Wood on successfully defending his thesis on 'Elements of Solar Activity - Particle Acceleration and Filament Formation'. Paul will join golf club manufacturer PING (based in Phoenix, Arizona) in May to co-ordinate their research into, well, golf clubs.  
Good luck, Paul !
- Congratulations to Tibor Toeroek for successfully defending his thesis at the University of Potsdam, Germany, on 17 December 2004. Tibor has been a visitor of the Solar Theory Group (supported by the PLATON Research Training Network) between May 2003 and July 2004. He is now a PostDoc at MSSL.
- Last spring, two groups from the School were partners in bids in response to the EPSRC call for outline proposals for multidisciplinary critical mass research activity in mathematics. Both bids made it onto the shortlist of three, with one award of 1m pounds on offer. It came as a very welcome surprise to discover that EPSRC chose to fund both bids!

The first award is for Computational Algebra and Applications and will be wholly held by the Centre for Interdisciplinary Research in Computational Algebra (CIRCA). The investigators are Steve Linton (CS), Nik Ruskuc, Martyn Quick, Ian Gent (CS), Ian Miguel (CS), Andy MacKenzie (Physics) and Ulf Leonhardt (Physics), while Edmund Robertson is a

Recognised Researcher. This award will allow us to develop new collaborative research programmes, notably with physics, add new dimensions to our existing ones and undertake key supporting research and development in computational algebra. The individual projects cover a wide range from theoretical research on the interface between Algebra and Theoretical Computer Science to applications of Computational Algebra in Physics; another significant component will be maintenance and development of the GAP package for Computational Algebra. The grant will run for five years and will support four research assistants, two research students, a half-time secretary and a senior programmer/system manager, funded by the University. There are funds to support visitors to the Centre and a series of workshops.

The second award is to allow the statistical ecologists at CREEM to establish a national centre for statistical ecology, jointly with statistical ecology groups at Cambridge (led by Steve Brooks - the statistician, not the computer expert!) and Kent (led by Byron Morgan, who will be first director of the centre). The funds will allow us to appoint postdocs and postgrads in all three groups. They will work on a joint project to develop statistical methods and algorithms for defining and fitting a wide range of models for the dynamics of biological populations. There are also funds to allow regular gatherings of staff and research students, and an international scientific steering committee will attend once a year. Members of this committee are Prof Jeremy Greenwood (Director, British Trust for Ornithology), Prof Jean-Dominique Lebreton (Director of Research, Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier), Prof Ian Boyd (Director, Sea Mammal Research Unit, St Andrews), Prof Bryan Grenfell (Pennsylvania State University) and Dr Jim Nichols (Senior Scientist, Patuxent Wildlife Research Center). The University will fund a "St Andrews Studentship in Statistical Ecology" to fund a highly-qualified research student within the Centre.

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## FAREWELL & GOOD LUCK

- Dan Brown is leaving to take up a permanent lectureship at Aberystwyth - from one celtic university by the sea to another - we all offer you congratulations Dan and wish you well in your new position. Dan came from Swansea (where he gained a 1st in pure and applied maths) and from Bath

(where he gained an MSc in nonlinear mathematics. He completed an outstanding PhD thesis on Magnetic Topology and has then been with us as a postdoc for the past 5 years, during which he has been a key member of the MHD Theory group, giving generously of his time to help a wide variety of students and postdocs (not to mention permanent staff) in many different ways.

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## SEMINARS, LECTURES, RESEARCH VISITS

- Clare Parnell organised a focussed workshop on small, photospheric, magnetic fragments which took place from 15 - 19 November in the Maths department. The aim of the workshop was to identify and reconcile differences in the various codes used for the detection and tracking of such fragments. Taking part were Craig DeForest and Derek Lamb (SWRI, Boulder), Mandy Hagenaar (Lockheed, Palo Alto) and Brian Welsh (Berkeley).
- Dieter Nickeler (and his wife Michaela, an Astrophysicist) visited the Solar Group during Reading Week. Dieter is presently based at the University of Utrecht where he is working towards a PhD. He has done his Diploma in Physics in Bochum, supervised by Karl Schindler. He has then first moved to the University of Bonn, working with Hans Fahr on the structure of the Heliosphere and has then moved to Utrecht where he continues this work. Dieter is especially interested in MHD states with flows, both ideal and non-ideal.
- Duncan Mackay gave a seminar on Thursday 16th December at Mullard Space Science Laboratory, UCL. The seminar was on 'Magnetic Flux Transport Simulations of the Sun and Sun-like Stars'.
- Ineke De Moortel gave a seminar on 'Slow wave propagation in coronal loops' on Monday 15th November at Warwick University. She also visited Bob Rosner at Cambridge University, on 9th December.
- Rhona Maclean, currently a second year PhD student in the solar group, visited the Max Planck Institute for Solar System Physics in Katlenburg-Lindau (Germany) for a week in November. While she was there, she worked with Joerg Buechner and Bernd Nikutowski on the application of magnetic topology to observations of bright points. She also gave a seminar

entitled "Topological Techniques and Examples of their Application in Solar Physics".

- In December Murray Elder and Colin Campbell attended the Canadian Maths Society Winter Meeting in Montreal. Murray gave a talk in the Combinatorial Group Theory Special Session entitled "Geodesic languages for the lamplighter groups and other wreath products". Murray also gave a talk at the Fields Institute in Toronto in the Algebraic Combinatorics Seminar entitled "Pattern avoiding permutations are context-sensitive".
- During the first week of December, Kenneth Falconer gave colloquium talks at the Universities of York, Bath and Strathclyde on a variety of topics; all three talks attracted surprisingly large (30+) audiences.
- Delaram Kahrobaei spent 10 days at Institut Hautes Etudes Scientifiques (IHES), the French national research institute, where she had fruitful discussions with many leading mathematicians including Christophe Soule and Maxim Kontsevich. During her visit she gave a mathematics seminar 'Removing commutativity from classical cryptography: an algebraic approach' to a distinguished audience. She also visited Ecole Normale Superior de Lyon where she gave an informal talk entitled "generalized free products of finitely generated nilpotent groups are often residually solvable" which led to interesting discussions with Etienne Ghys.
- Delaram Kahrobaei visited the University of Warwick in mid-November where she gave an Algebra Seminar 'Residual solvability of groups' and had discussions with algebraists there, in particular with Derek Holt.
- In November Peter Jupp attended the Workshop on Quantum Statistics at the Isaac Newton Institute in Cambridge, where he spoke on 'Aspects of quantum statistical inference'.
- Alan Cairns was invited to attend a meeting of a number of experts on plasma physics held in Rome on 13th December. The object of the meeting was to advise the European Space Agency on future plasma science or technology experiments in space.
- Daniel Brown visited Sonoma, California (wine country) for the RHESSI-SOHO-TRACE workshop on solar flares. He joined working group 5 which concerned itself with flare ribbons and high-energy footpoints, and presented a brief presentation to that group. He also presented a poster on The Topology of Solar Flare Ribbons.

- Freda Kemp was invited to give a plenary lecture at the 28th National Congress of the Spanish Society of Statistics and Operational Research, held at the University of Cadiz. She spoke on 'Certain Parametric Regression Models for Count Data.'. This led to some useful contacts and she has now been invited to visit and give a talk in Barcelona. In addition to participating in conference activities, Freda and David were able to enjoy the old city of Cadiz and its surroundings and to appreciate why so many people like to spend the winter in southern Spain.

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## NEXT ISSUE

Please send material for the next Newsletter to: [mcsnews@mcs.st-andrews.ac.uk](mailto:mcsnews@mcs.st-andrews.ac.uk)



*MERRY CHRISTMAS*  
*&*  
*HAPPY NEW YEAR*

